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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,379	02/13/2004	Kimio Nagasaka	118427	4576
25944	7590	12/12/2005		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER WONG, TINA MEI SENG	
			ART UNIT 2874	PAPER NUMBER

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/777,379		NAGASAKA ET AL.	
	Examiner		Art Unit	
	Tina M. Wong		2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 12, 14-23 and 26 is/are pending in the application.
- 4a) Of the above claim(s) 24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12, 14-23 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/12/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01 December 2005 has been entered.

Claim Rejections - 35 USC § 103

Claims 1-5, 12, 14-18, 20-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,491,447 to Aihara.

In regards to claims 1, 2 and 20-23, Aihara discloses an optical module comprising a transparent substrate (31) having light transmittance properties, an optical element (37) arranged on another surface side of the transparent substrate and emits a signal light to the other surface side of the transparent substrate according to a supplied electrical signal (51) or generates an electrical signal (51) according to the intensity of the light supplied from the other surface side of the substrate and a reflective portion (34) arranged on the other surface side of the transparent substrate and changes the path of the light signal substantially 90 degrees (Column 4) to guide the light signal to or from the optical element. (Figure 5a, 5b, and 5c) But Aihara fails to disclose an optical socket attached to an optical plug on the other surface side of the transparent substrate in Figures 5a, 5b, or 5c. However, Aihara discloses a modified form of Figure 5, Figures 8a and 8b. Figure 8a shows a socket (62) and Figure 8b shows a plug (61), which is attached. Figure 8a further shows the optical socket to have guide surfaces (68) with two

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surfaces substantially parallel to each other and substantially orthogonal to one surface of the transparent substrate and substantially parallel to the other surface of the transparent substrate.

Therefore, since Aihara discloses Figure 8 to be a modified form of Figure 5, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket attached to an optical plug on the other surface side of the transparent substrate.

Additionally, Aihara does disclose a thick walled portion (31c), which holds an optical fiber (15) and a prismatic portion (31a), which holds the reflective portion integrally formed with the top of the transparent substrate. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket (31a) attached to an optical plug (31c), since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179

In regards to claim 3, Aihara discloses a first lens (45), which converges the light.
(Column 5)

In regards to claims 4 and 5, Aihara fails to explicitly disclose the first lens to be formed in an optical socket or on the transparent substrate. However, Aihara discloses a unitary structure comprising of a transparent substrate, plug and socket. Therefore, the first lens would be formed in an optical socket or on the transparent substrate since all of the pieces form a unitary piece.

In regards to claim 12, Aihara fails to explicitly disclose a pressing device to press the optical plug to the other surface. However, since all of the pieces form a unitary piece, the optical plug is already formed/pressed to the substrate. (Figure 8)

In regards to claims 14, 17 and 18, Aihara discloses a V-shaped groove as guide surfaces.
(Column 6)

In regards to claim 15, Aihara discloses two surfaces having projection portions to bias the optical plug. (Figure 8, Column 7 and 8)

In regards to claim 16, although Aihara does not specifically disclose a locking device to hold the plug into the socket, since the plug and socket are integrally formed as one piece, the plug and socket would therefore be held together since they are integrally/unitarily formed.
(Figure 8)

In regards to claim 26, Aihara discloses a first lens (45) being arranged on one side surface of the substrate including a convex portion arranged on the substrate.

Claims 6-9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,491,447 to Aihara in view of U.S. Patent 6,846,113 to Yeh et al and U.S. Patent 6,556,747 to Ouall et al.

In regards to claim 6, Aihara discloses an optical module comprising a transparent substrate (31) having light transmittance properties, an optical element (37) arranged on another side of the transparent substrate and emits a signal light to the one side of the transparent substrate according to a supplied electrical signal (51) or generates an electrical signal (51) according to the intensity of the light supplied from the one side of the substrate and a reflective portion (34) arranged on the one side of the transparent substrate and changes the path of the light signal substantially 90 degrees (Column 4) to guide the light signal to or from the optical element. (Figure 5a, 5b, and 5c) Aihara further discloses a first lens (45) formed in the optical socket. (Figure 3 and 4) Additionally, Aihara discloses a parabolic surface formed as part of

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the prismatic protrusion (31a) in order to align the light signal to the endface of the optical fiber, which performs the same function as a lens to direct the light to the appropriate place. (Figure 2)

But Aihara fails to disclose an optical socket attached to an optical plug on the one side of the transparent substrate in Figures 5a, 5b, or 5c. However, Aihara discloses a modified form of Figure 5, Figures 8a and 8b. Figure 8a shows a socket (62) and Figure 8b shows a plug (61), which is attached. Therefore, since Aihara discloses Figure 8 to be a modified form of Figure 5, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket attached to an optical plug on the other surface side of the transparent substrate.

Additionally, Aihara does disclose a thick walled portion (31c), which holds an optical fiber (15) and a prismatic portion (31a), which holds the reflective portion integrally formed with the top of the transparent substrate. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket (31a) attached to an optical plug (31c), since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. (*Nerwin v. Erlichman*, 168 USPQ 177, 179)

Aihara further fails to disclose a second lens formed in the optical plug. However, Aihara does disclose the optical fiber to be part of the optical plug. Additionally, including a lens in the optical plug, such as a lensed fiber, it would further improve the module by increasing coupling efficiency of the signal light. Both Yeh et al and Ouall et al disclose lensed optical fibers. Both further disclose using a lensed fiber would increase the coupling efficiency of light energy into other optical components. Therefore, it would have been obvious at the time the

invention was made to a person having ordinary skill in the art to have used a lensed fiber in order to increase coupling efficiency.

In regards to claim 7, Aihara discloses a positioning surface (33) performing a similar function as the second lens being formed in the optical plug since all of the pieces form a unitary piece.

In regards to claim 8, Aihara discloses a parabolic surface formed as part of the prismatic protrusion performing a similar function as the second lens being formed in the optical socket since all of the pieces form a unitary piece.

In regards to claim 9, Aihara discloses a first lens converging the signal light into substantially parallel light and the second lens converging the signal light into substantially parallel light.

In regards to claim 19, Aihara discloses a wiring layer (Figure 5b) on one surface of a transparent substrate (31), arranging an optical element on another surface of the transparent substrate (34, 15), mounting an optical coupling component (37) corresponding to the optical element. For example, Figure 6 shows an optical tape with a plurality of optical components. Aihara further discloses mounting an optical plug and optical socket corresponding to each optical element on a surface of the substrate, the optical socket having guide surfaces to position the optical plug, where the two surfaces are substantially parallel to each other and substantially orthogonal to one surface of the transparent substrate and substantially parallel to the other surface of the transparent substrate. But Aihara fails to disclose cutting and dividing the transparent substrate into a plurality of regions. However, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have cut and divided

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the substrate into a plurality of regions since by manufacturing a plurality of small sized modules on a single substrate allowed the modules to be manufactured at lower costs.

Aihara further fails to disclose a lens formed in the optical plug. However, Aihara does disclose the optical fiber to be part of the optical plug. Additionally, including a lens in the optical plug, such as a lensed fiber, it would further improve the module by increasing coupling efficiency of the signal light. Both Yeh et al and Ouall et al disclose lensed optical fibers. Both further disclose using a lensed fiber would increase the coupling efficiency of light energy into other optical components. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used a lensed fiber in order to increase coupling efficiency.

Response to Arguments

Applicant's arguments filed 01 December 2005 in regards to claims 1-5, 12, 14-18, 20-23 and 26 have been fully considered but are not persuasive.

Applicant argues Aihara's connector is not actually part of the optical transmission path. However, in response to Applicant's arguments, the recitation has not been given patentable weight. It has been held that the preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951)

Applicant's arguments, filed 01 December 2005, with respect to the rejection(s) of claim(s) 6-9 and 19 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in

view of U.S. Patent 6,491,447 to Aihara in view of U.S. Patent 6,846,113 to Yeh et al and U.S. Patent 6,556,747 to Ouall et al.

Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-F all disclose optical modules with reflective surfaces that change the direction of the light signal by at least ninety degrees.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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12/8/05